

REMARKS

Reconsideration of the present application in view of the above amendments and following remarks is requested respectfully.

Claims 1 to 8 are pending in the present application. Claim 1 has been amended. Support for the above amendments is found throughout Applicants' specification such as, for example, in Figures 2A-D and 3.

The Office Action includes rejections under 35 U.S.C. §§ 102(b) and 103(a) which are addressed below.

The Claimed Invention

The claimed invention as set forth above in amended independent claim 1 defines an improved leadframe-based chip scale package. The chip scale package in accordance with the present invention provides improved adhesion between the die attach pad and a mold compound used for encapsulation. By improving adhesion between the die attach pad and the mold compound, the performance and reliability of the chip scale package is improved. The chip scale package in accordance with the present invention improves the adhesion between the die attach pad and the mold compound by using an aperture formed in the die pad. Significantly, the die attach surface is defined by a second surface of the die being in mated contact with the die attach pad and the aperture is located away from the die attach surface.

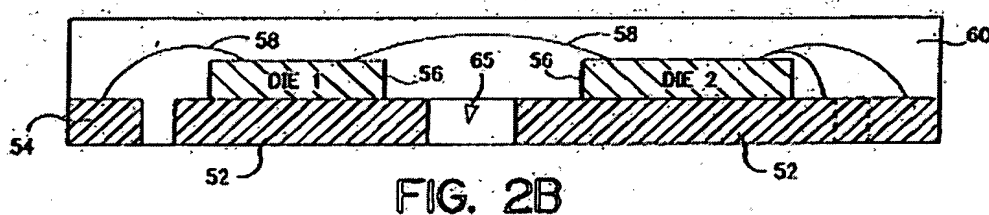
Discussion of the Rejections Under 35 U.S.C. § 102(b)

Claims 1-3 and 5-7 stand rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by U.S. Patent No. 4,884,124 to Mori ("the Mori patent"). Applicants respectfully traverse this

rejection as the Mori patent does not disclose each and every element of Applicants' claimed invention.

For a reference to anticipate a claim under 35 U.S.C. § 102, "the identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 9 U.S.P.Q.2d 1913, 1920 (Fed. Cir. 1989). Further, "a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987).

Applicants' claimed invention recites a chip scale package comprising at least one die having a first surface and an opposing second surface, the at least one die mounted on the die attach pad such that substantially the entire opposing second surface of the die is in mated contact with the die attach pad. This feature is illustrated in, for example, Applicants' Figure 2B:

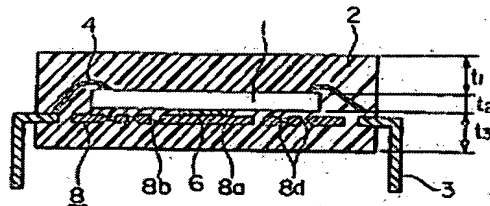


In this regard, substantially the entire bottom surface of the die is in mated contact with the die attach pad 52.

The Mori patent, in contrast, does not teach or suggest at least one die mounted on the die attach pad such that substantially the entire opposing second surface of the die is in mated contact with the die attach pad. Rather, referring to Figure 7 of the Mori patent, the Mori patent

teaches that the die 1 is bonded only at the center of its bottom surface 6 to the top surface of a flat base 8 such that there is a *space between* the flat base 8 and the die 1 over most of the bottom surface of the die 1:

FIG. 7



Further in this regard, the Mori patent teaches that the purpose of the presence of apertures 8b is to create a flow path so the molten resin mold material can fill this gap:

When the semiconductor element 1 and the base 7 are encapsulated in the resin 2, *the resin 2 fills the insides of the holes 7d in the base 7 and clings to the inner surfaces thereof.* Furthermore, the *holes 7d increase the smoothness of the flow of the molten resin 2 so that the resin 2 will completely fill the gap between the semiconductor element 1 and the base 7.* As a result, the adhesion of the resin 2 to the base 7 is increased, and the two are rigidly connected together

(the Mori patent at col. 3, lines 37-45 referring to Figure 5) (emphasis added).

Applicants' claimed invention, in contrast, requires that substantially the entire second surface of the die is in *mated contact* with the die attach pad (see claim 1). This development is advantageous over that disclosed in the Mori patent because the risk of the die bending is lessened without the cost associated with the additional molding material that Mori teaches is required to fill the gap between the die and the die attach pad. Accordingly, since the Mori

patent does not disclose each and every element of Applicants' claimed invention, the rejection for alleged anticipation in view of the Mori patent is improper and should be withdrawn.

Verdegaal Bros. v. Union Oil Co. of California, 2 USPQ.2d 1051, 1053 (Fed. Cir. 1987).

Discussion of the Rejections Under 35 U.S.C. § 103(a)

Claim 4 stands rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over the Mori patent. Similarly, claim 8 stands rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over the Mori patent in view of Applicants' admitted prior art Figures 1A and 1B. Applicants respectfully traverse these rejections.

As discussed above, the Mori patent does *not* disclose each and every element of claim 1, the claim from which claims 4 and 8 depend. Thus, it is immaterial whether it would have been obvious to one skilled in the art at the time Applicants' invention was filed to either modify the shape of the aperture (as recited by claim 4) or to use multiple dies (as recited by claim 8) as is alleged in the Office Action. Accordingly, reconsideration and withdrawal of the rejection under 35 U.S.C. § 103(a) is respectfully requested.

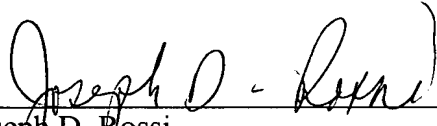
Conclusion

Applicants believe that the foregoing constitutes a complete and full response to the Office Action of record. Accordingly, an early and favorable reconsideration of the rejections and an early and favorable allowance of all of pending claims are requested respectfully.

In the event any issues remain outstanding, the Examiner is requested to call he undersigned at the telephone number listed below.

The Commissioner is authorized hereby to charge any fees or credit any overpayment associated with this Reply (copy enclosed) to Deposit Account Number 19-5425.

Respectfully submitted,
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